The Gradav Guide to Sennheiser 3000 series Radio Mics

Intro & Overview

The 3000 series of Radio Mic equipment is used in West End Theatre productions, by Broadcasters, and those users looking for that extra quality that is inherent in Sennheiser's more expensive systems.

The EM 3032 dual receivers allow the user to *fine tune* the system. Output level adjustment, squelch control and a comprehensive LCD display are there for the experienced user. A headphone socket per channel is a handy facility for all users.

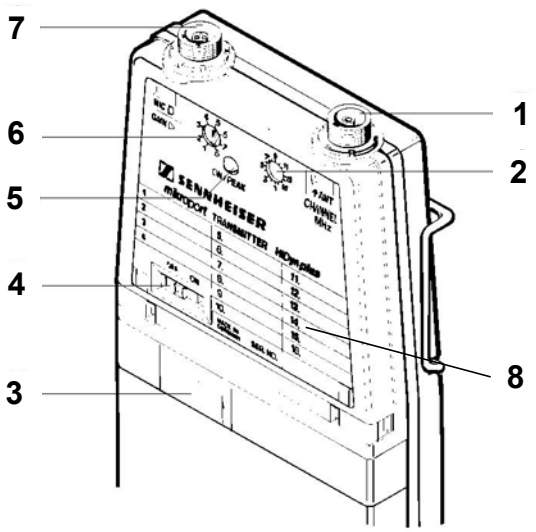
Metal casings are used throughout the range giving an improved RF performance, and a greater robustness.

Where transmitter size is important we have the SK5012, which is much smaller than the SK50/SK3063 pocket packs. There is a small cost for the reduction in size, and the SK5012 does not indicate battery life on the receiver as do all the other transmitters.

This guide has been written to assist the user who is new to this system to get the result they are looking for with the minimum of time and worry. It will also aid the experienced user whose memory needs a little help!

Fault finding is never easy, especially when you are under pressure. We have added a section that may just save your reputation (and sanity)!

Pocket Pack Transmitters



STARTS TO BLINK IF THE REMAINING OPERATING TIME FALLS BELOW 30 MIN.

SK50 & SK3063

These packs are identical in operation and are distinguished by the silver body of the SK50 and the black body of the SK3063.

We supply these transmitters with the aerials fitted. The connector (**1**) is a screw-lock single pin Lemo connector. It is important that the locking ring is tight.

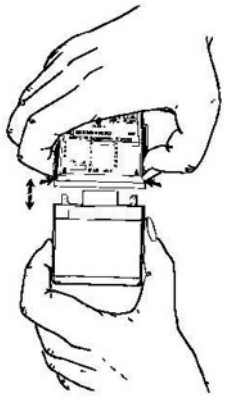
Microphones to fit socket (**7**) are either fitted with a screwdown connector (as the aerial) or more frequently with a push to insert type; where a pull on the barrel both unlocks and removes the connector. Never unscrew this style of connector as internal damage results, often leaving the connector stuck in the transmitter. This is a 3 pin Lemo connector, to prevent accidental insertion in the aerial socket (and vice versa).

The channel selector switch (**2**) is screwdriver operated. Frequency allocations are as shown on the front panel (**8**).

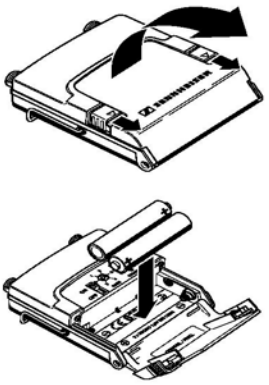
There is a multi-segment LED display on the battery pack that gives an indication of battery life (**3**). See the chart above.

The ON/OFF switch (**4**) is recessed to avoid accidental operation. When the transmitter is on the LED (**5**) will light. This LED will flash in the event of input (microphone) overload. Reduce gain on the screwdriver operated input gain control (**6**). We find that a setting of 3 suits most applications.

To remove the battery pack you must first squeeze the catches either side of the trasmitter as shown. Slide the pack downwards while continuing the pressure on the catches. Install MN1500 (AA) batteries. Replace battery box by sliding back into position.



SK 5012

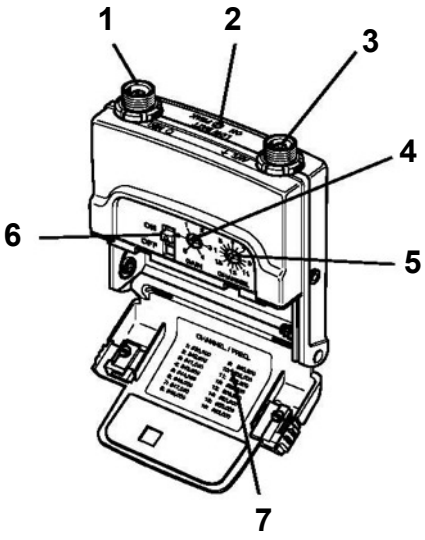


To open the battery cover you must squeeze the catches on either side and move towards the hinge, as shown by the small arrows on the diagram, on the left.

When they have reached the end of their travel you can hinge the cover open. This gives access to change the battery set of 2 x MN2400 (AAA). Please check for polarity when inserting.

Open this cover to give access to the controls etc as below.

Close the cover when you have finished. It will close with a click as the catches engage. This arrangement prevents accidental access to the controls, but the LED (**2**) is still visible.



We supply these transmitters with the aerials fitted. The connector (**3**) is a screw-lock single pin Lemo connector. It is important that the locking ring is tight.

Microphones to fit socket (**1**) are either fitted with a screwdown connector (as the aerial) or more frequently with a push to insert type; where a pull on the barrel both unlocks and removes the connector. Never unscrew this style of connector as internal damage results, often leaving the connector stuck in the transmitter. This is a 3 pin Lemo connector, to prevent accidental insertion in the aerial socket (and vice versa).

The channel selector switch (**5**) is screwdriver operated. Frequency allocations are as shown on the panel (**7**).

When the On/Off switch (**6**) is moved to the ON position, the LED (**2**) lights. The LED will start to blink about 30 mins before operation will cease. The rate of blinking will increase as the battery life diminshes.

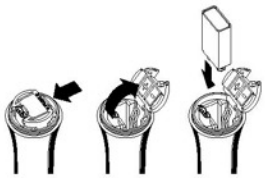
The SK 5012 does not have battery indication circuitry, unlike other transmitters in this series.

Screwdriver switch (**4**) is used to adjust the input gain. We test at a setting of 3, and find this level suits most applications. If the input is overloaded the LED (**2**) will flash brightly.

This is a particularly small transmitter, with a case size of 53 x 60 x 17 mm.

Hand Held Transmitter

SKM 3072



To change the MN1604 (PP3) battery, you must first unscrew the capsule as shown.

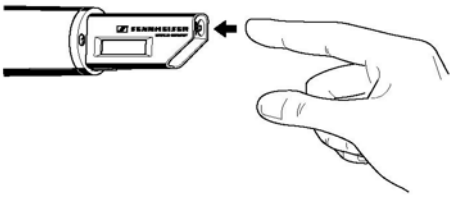
Pressing against the side of the battery compartment cover will release the lid, allowing the old battery to be removed.

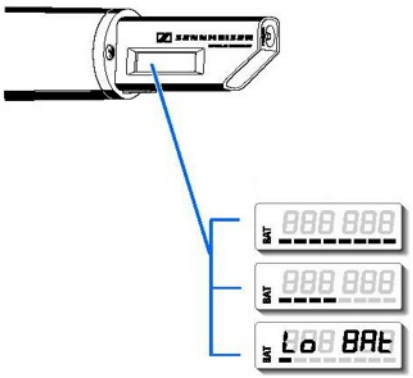
Replace the battery, ensuring that the rubber transit cover has been removed from the battery terminal, and that the correct polarity has been observed. The transmitter terminals have been designed to prevent operation should the battery be inserted with the wrong polarity.

Close the cover and replace the capsule to ready the transmitter for operation.

Press the button briefly in the end of the transmitter, as shown, to turn the transmitter on. There is a delay of about 2 seconds before the self-test checks are complete and transmission begins.

Press the button for > 1 second to turn off.



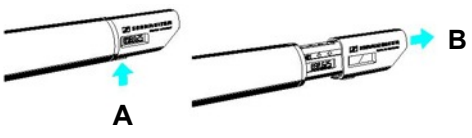


Battery status is shown by a row of segments as illustrated on the left.

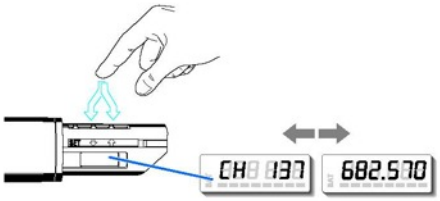
8 segments	Full battery life
4 segments	Half battery life
1 segment	Nearly flat. Lo BAt alternates with the screen display.

You can always monitor battery life on the EM3032 receiver

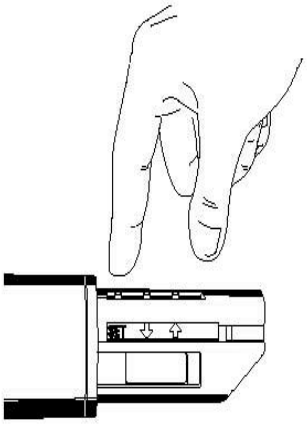
Press the ribbed area on the cap body (**A**) and then you can remove the cover by pulling in the direction of (**B**). There are a variety of different coloured covers, which may be changed to aid identification.



Use the ▲ and ▼ buttons to toggle the display between channel number and frequency.



Using the SET and ▼/▲ buttons it is possible to alter some transmitter settings.



Function	SET	Adjust	Store
Sensitivity note 1	1 press	▼▲	Press SET > 1 sec
Channel Change	2 presses	▼▲	Press SET > 1 sec
Assign Channel Number	3 presses	▼▲	Press SET > 1 sec
Power Lock ON	4 presses	▼▲	Press SET > 1 sec
Power Lock OFF	1 press	note 2	Press SET > 1 sec

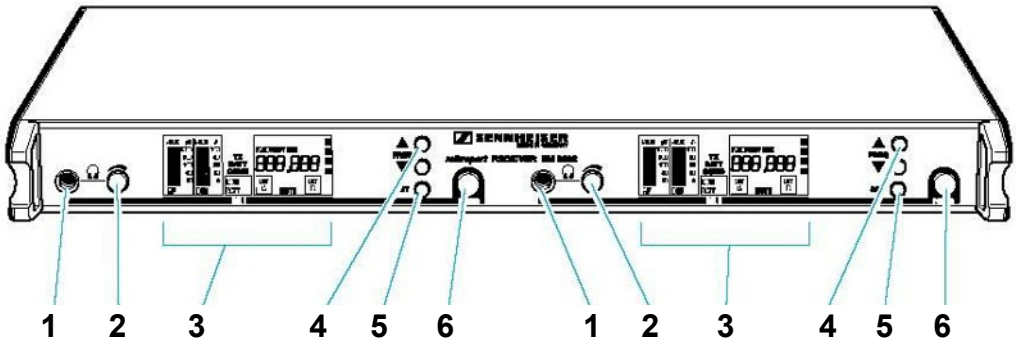
note 1 Sensitivity changes will be heard immediately, but levels will revert after 15 seconds if the new level is not stored.

note 2 Once the Power Lock is applied, all other settings are fixed. To alter settings, first take the Power Lock off.

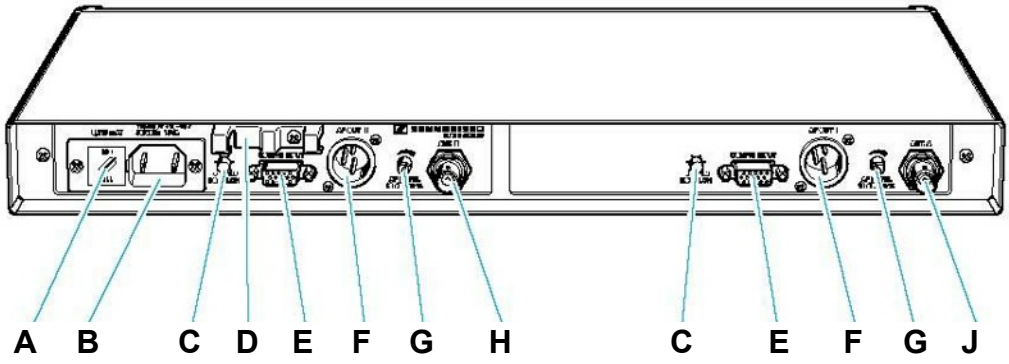
All the frequencies shown can be used together, although it is worth noting that as the number of frequencies in use increases, so does the likelihood of external conditions affecting system performance. Always take great care over receiver aerial placement when using a large number of channels together.

Frequency Allocations							
1	854.900	5	856.575	9	860.400	13	repeat
2	855.275	6	857.625	10	860.900	14	repeat
3	855.900	7	858.200	11	861.200	15	repeat
4	856.175	8	858.650	12	861.750	16	repeat

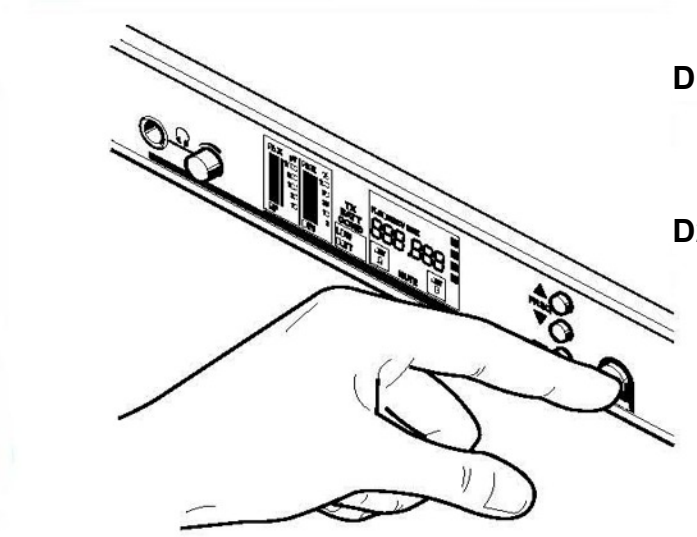
EM 3032 Receiver



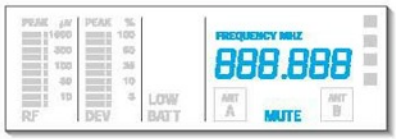
1 Headphone socket 6.3 mm (¼in)
2 Headphone volume control
3 LCD display panel. Shows frequency information, RF data and battery life.
4 Frequency selection buttons
5 SET button for storing a selected frequency
6 On/off switch (per channel)



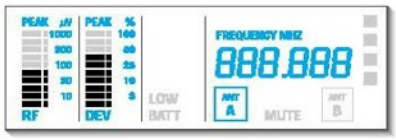
A Fuse Holder and mains voltage selection
B Mains connector
C Squelch adjustment
D Strain relief clamp for mains cable
E Service test point
F Audio output on 3pin XLR (balanced)
G Audio output level control
H Aerial connector B
J Aerial connector A



D1



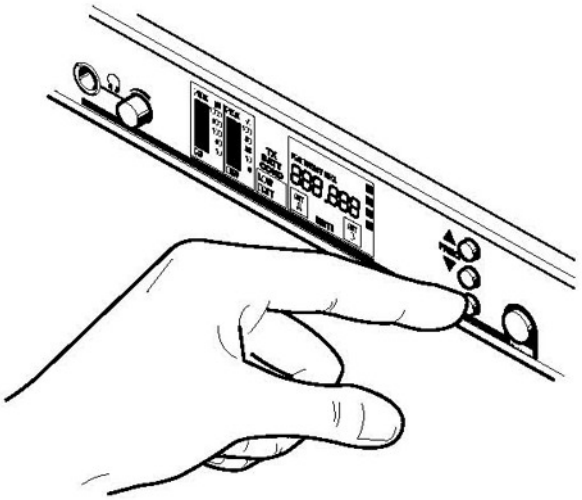
D2



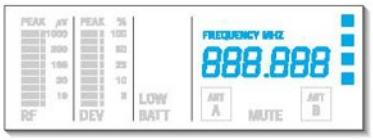
Switch on by pressing the ON/Off switch(**6**).

The display will light (**D1**) to show the frequency in use. MUTE will also be lit.

If a transmitter is operating on this frequency there will be a delay of 4 seconds before the display will change (**D2**) to show RF level, deviation and receiving aerial in use (A or B).



D3



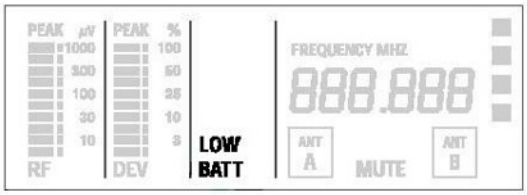
Press the SET button (**5**). The text "FREQUENCY MHZ" will flash (**D3**).

Using ▼/▲ buttons (**4**), select a different frequency.

Press SET (**5**) for > 3 seconds to store the change. Confirmation of the change is given by "FREQUENCY MHZ" ceasing to flash and "Sto" appearing when the rest of the display goes off briefly.

Pressing SET briefly will cancel at any time during this operation.

D4



The SKM 3072, SK 50 and SK 3063 transmitters transmit a battery status signal.

When 20 to 30 minutes battery life remains, the receiver display shows "LOW BATT" (**D4**).

If squelch is activated "MUTE" will light, and the "LOW BATT" will extinguish. It will relight when a signal is received from the transmitter.

Operation

Check that all the items on the delivery note have been supplied, before you assemble your system. Please report any shortages immediately. We have less sympathy with a claim that goods were not supplied after the hire has ended, than we have for a shortage reported at the beginning.

In particular, note the number of tie clip microphones and their associated clips. Both can remain attached to costumes, and just vanish at the end of the show!

Connect receivers to mixer inputs and attach all aerials.

Single kits have their aerials attached, and these need only to be extended and set as shown in the cover picture.

Multi-channel kits are supplied with 2 Dipole aerials that are connected to the ADA (Aerial Distribution Amplifier) and this supplies RF signals to all receivers. Dipole aerials should be a minimum of 3 metres apart. Set with the elements vertical. Note that on UHF aerials there is a moulded 'E'. This is to show which element should be at the bottom. VHF aerials have a whip for the upper element, and a helical for the lower.

Failure to set aerials correctly can affect performance markedly. It is worth spending time experimenting with aerial location, for a small change can often transform system performance.

Where we have supplied a flightcased system, you should note that we number the transmitter, it's receiver and output cable with corresponding channel numbers.

Power up by connecting to the mains and remember to switch on the ADA (Aerial Distribution Amplifier). Failure to switch on the ADA will not prevent operation, but the loss of RF signal will drastically affect performance.

Always test multichannel systems with all transmitters switched on.

Receivers lock onto the strong signals of their matching transmitters. In the abscence of such a signal they will accept unwanted interference (known as intermodulation interference - often shortened to 'intermod'), which can light several segments of the RF display. There is usually little or no audio present, but it can be confusing if displays light on channels you weren't expecting!

CHECK - every performance

- Each channel in turn for RF signal strength and audio quality.
- Inspect for damage to every microphone cable and connector.
- Transmitter aerial for cable damage and ensure that the connector is tight.
- Sensitivity (gain) switches get moved. Re-set if required.

Only when you are satisfied, should you distribute the transmitters. If you are not planning to use them immediately it may be best to switch off the transmitters. When all are switched off you should check the receiver displays. It will soon be obvious if you have missed one!

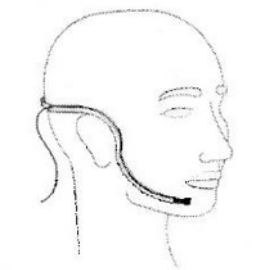
Always collect the transmitters at the end of the show. Change batteries if required, and conduct your checks straight away. It is better to discover a problem at the end of a show, rather than 10 minutes before you need it next time!

Handheld transmitters present fewer operational problems than do Pocket Packs. They are more likely to get dropped (or lost!). Stress to all users that they must take care until the transmitters are returned to you.

Pocket Pack transmitters can be disguised quite easily with most costumes, but do remember that aerials must be vertical. We offer black microphones as standard, but pink models are available if requested at the time of ordering.

Never stick aerials to skin

Capacitive coupling of aerial to skin (body) leads to high RF absorbtion, with a reduced effective output to the receiver. Avoid placing packs/aerials next to the skin. Sweat will always affect RF output.



Headband microphones are available (MKE48) at an extra cost.

NB2 adaptors are used with standard microphones (MKE2) as shown in the illustration. There is a charge for these adaptors.

Extra microphones are available should you wish to *hot pack* between different users.

We supply some spares with hires. Spare aerials and microphones are sealed and clearly marked. They should only be used in the case of failure.

Trouble Shooting

Distorts	Input overload. Check the setting of the gain switch on the transmitter. Overload in the mixer input. Reduce output gain on receiver and/or reduce input gain on mixer. If headworn, check the position of the microphone capsule.
No RF shown on receiver	Check that the transmitter is on. Is the battery OK? Try another one. Has the rubber transit cover been removed from the battery? Has the battery been inserted correctly? Check polarity
Intermittant RF	Check that the battery is properly installed. Inspect the transmitter aerial for damage and loose fitting. Check that the transmitter aerial is straight and as vertical as you can manage. Body absorbtion of RF. Check that the transmitter aerial is not stuck to the skin with tape. Avoid contact of aerial with skin if possible.
Works, but hisses	A faulty capsule. They can fail by giving low gain. Substitute a good microphone from another pack, or use the spare if only 1 pack is in use. A level mismatch, where a low signal is amplified by the next stage increasing background hiss to audible levels. Below are the most likely solutions to this. Reduce input gain on mixer, increase receiver output. Set attenuation setting to high on tranmitter. If distotion results, return to original setting.
Sweat in the pocket pack transmitter	Some actors (and some locations!) produce a lot of sweating. Ingress of sweat can affect performance. Consider re-positioning the pack on the actor. Take a child's balloon and trim with scissors so that you can encase the whole transmitter (not aerial!) in a waterproof covering.

Works only when close	Single unit: check that frequency of transmitter and receiver match. All channels in the system: Aerial placement. Move each dipole aerial in turn checking the signal strengths on the RF displays for improvements. Check transmitter aerial for looseness and damage. Check receiver aerials are vertical and with the [E] element at the bottom. Experiment with receiver aerial positions, while observing the RF displays on the receivers.
Microphone crackles	Screw-lock connectors need to have their locking ring tight. Check for looseness. Snap fit connectors should be fully home. Do not take apart, as bits fall out - never to be seen again - and the connector will need replacing. If you think you have found a faulty microphone, test your suspicions by substituting a working microphone from another unit. Then confirm by trying the suspect microphone on a pack that is known to work without crackling.
Scraping noises	Check that the capsule does not come into contact with costume or jewellery. Cable scraping can cause spurious noises. Secure the microphone cable by passing it inside the crocodile jaws of the clip, creating a small semi-circular loop of cable just below the microphone capsule. Scraping noises travelling along the cable should be stopped where the cable is gripped.

Gradavclick
Nice people to talk to TEL: 020 8803 7400

Our On-Line Buying Solution

Over 500 products available!

1. **Visit www.gradavclick.co.uk**
2. **Add your goods to the cart**
3. **Have you Debit/Credit Card ready**
4. **Place your order**
5. **Sit back and wait for delivery**

Gradav Hire and Sales Ltd

Unit C6 Hastingwood Trading Estate
Harbet Road London N18 3HU

Phone 020 8803 7400 FAX 020 8803 5060
email office@gradav.co.uk Web www.gradav.co.uk